



NUMBERS AND NARRATIVE:  
MODELING, STORY TELLING AND  
INVESTING

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# Let's start with an experiment

A valuation of Amazon in October 2014

# A DCF valuation of Amazon

## Amazon: A DCF valuation in late October 2014

Revenues grow @15% a year for 5 years, tapering down to 2.2% growth after year 10

	Base year	1	2	3	4	5	6	7	8	9	10	Terminal year
Revenue growth rate		15.00%	15.00%	15.00%	15.00%	15.00%	12.44%	9.88%	7.32%	4.76%	2.20%	2.20%
Revenues	\$ 85,246	\$98,033	\$112,738	\$129,649	\$149,096	\$171,460	\$192,790	\$211,837	\$227,344	\$238,166	\$243,405	\$ 248,760
EBIT (Operating margin)	0.58%	1.26%	1.94%	2.62%	3.30%	3.98%	4.66%	5.34%	6.02%	6.70%	7.38%	7.38%
EBIT (Operating income)	\$ 494	\$ 1,235	\$ 2,187	\$ 3,397	\$ 4,920	\$ 6,824	\$ 8,984	\$ 11,312	\$ 13,686	\$ 15,957	\$ 17,963	\$ 18,358
Tax rate	31.80%	31.80%	31.80%	31.80%	31.80%	31.80%	31.80%	31.80%	31.80%	31.80%	31.80%	31.80%
EBIT(1-t)	\$ 337	\$ 842	\$ 1,492	\$ 2,317	\$ 3,356	\$ 4,654	\$ 6,127	\$ 7,715	\$ 9,334	\$ 10,883	\$ 12,251	\$ 12,520
- Reinvestment		\$ 3,474	\$ 3,995	\$ 4,594	\$ 5,284	\$ 6,076	\$ 5,795	\$ 5,175	\$ 4,213	\$ 2,940	\$ 1,424	\$ 2,755
FCFF		\$ (2,632)	\$ (2,504)	\$ (2,278)	\$ (1,928)	\$ (1,422)	\$ 332	\$ 2,540	\$ 5,121	\$ 7,943	\$ 10,827	\$ 9,766
Terminal Value											\$168,379	
Cost of capital		8.39%	8.39%	8.39%	8.39%	8.39%	8.32%	8.24%	8.16%	8.08%	8.00%	8.00%
PV(FCFF)		\$ (2,489)	\$ (2,189)	\$ (1,842)	\$ (1,446)	\$ (994)	\$ 169	\$ 1,420	\$ 2,681	\$ 3,865	\$ 80,918	

Operating margin improves to 7.38% in year 10, weighted average of retail & media businesses

Reinvest \$1 for every \$3.68 in additional revenues

PV(Terminal value)	\$ 76,029
PV (CF over next 10 years)	\$ 4,064
Value of operating assets =	\$ 80,093
- Debt	\$ 8,353
+ Cash	\$ 10,252
Value of equity	\$ 81,143
- Value of options	\$ -
Value of equity in common stock	\$ 81,125
Number of shares	463.01
Estimated value /share	\$ 175.25
Price	\$ 287.06
Price as % of value	163.84%

Debt ratio is 94.7% equity, 5.3% debt, with a pre-tax cost of debt of 5.00%.

Beta used in cost of capital is 1.12, weighted average of online retail, entertainment and business services (cloud). ERP is weighted average of US ERP (5%) and rest of the world (6.45%)

# A 'narrative' about Amazon

1. Continue high revenue growth: In valuing Amazon, I am going to assume that the company is going to continue on its path of growing revenues rapidly (high revenues), with media and cloud services adding to retail, to become the second largest retailer in the world.
2. By selling products at or below cost: In pursuit of this growth, Amazon will continue to give away its products and services at or below cost, leading to a continuation of low operating margins for the next few years.
3. Aspirations of using market power: Once Amazon reaches a dominant position, it will raise prices on products/ services but the ease with which new entrants can come into the business will act as a restraint on prices (keeping operating margins constrained in long term).
4. Low/different reinvestment: Amazon will have to invest in a mix of assets, including infrastructure, computing services, acquisitions and product development, but will be able to deliver more revenues/dollar investment than the typical retail firm.
5. Shifting risk profile: Amazon's risk profile will be a mix of retail, entertainment and business services as well as its geographic ambitions, and the technology twist to its business will keep debt ratios low (lower than brick and mortar retailers).



# A quick test

- Now that you have been exposed to two different valuations of Amazon, one driven entirely by numbers and one set as a story, which one do you find more credible?
  - a. The DCF valuation
  - b. The Amazon story
- Which one are you more likely to remember tomorrow?
  - a. The DCF valuation
  - b. The Amazon story
- What would your biggest concern be with each one?

# Marrying numbers & narrative

To deliver this high revenue growth, Amazon will continue to sell its products/services at or below cost. Operating margin stays low for the next few years.

Amazon will continue on its path of revenue growth first, pushing into media & cloud services to become the second largest retailer in the world. Revenues grow @15% a year for 5 years, tapering down to 2.2% growth after year 10

As Amazon becomes more dominant, it will increase prices, but easy entry into the business will act as a restraint. Operating margin improves to 7.38% in year 10, weighted average of retail & media businesses

Amazon will be able to invest more efficiently than the average retailer. Reinvest \$1 for every \$3.68 in additional revenues

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Amazon's technology twist will keep financial leverage low. Debt ratio is 94.7% equity, 5.3% debt, with a pre-tax cost of debt of 5.00%.

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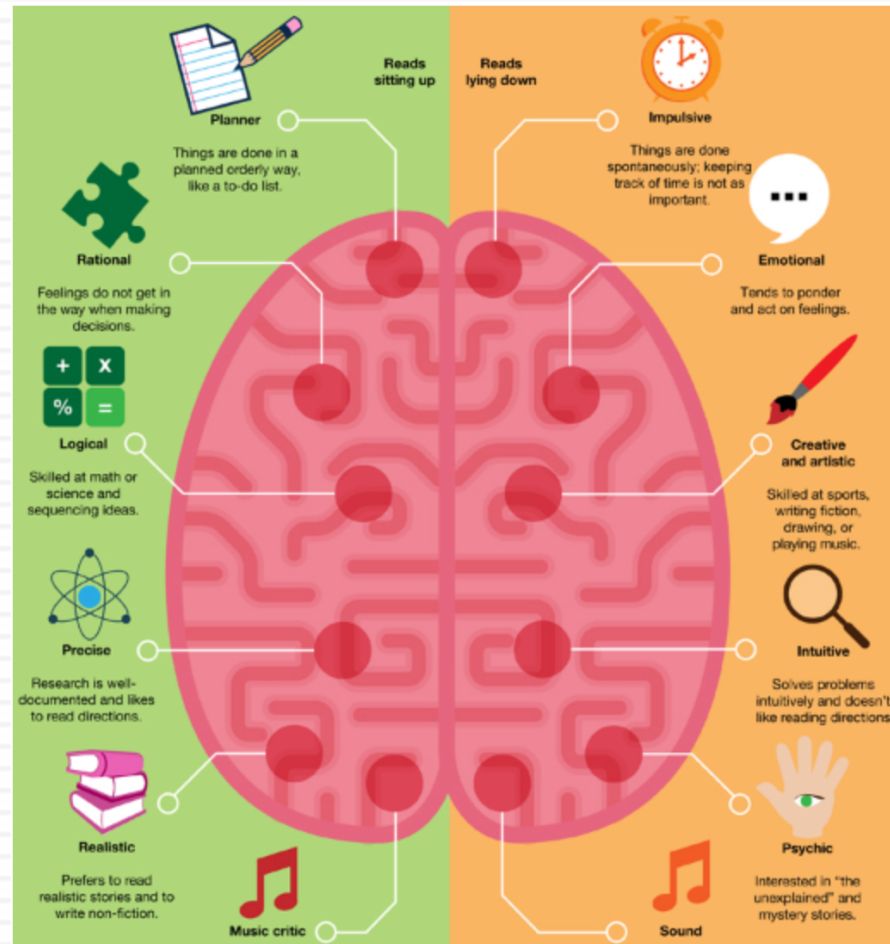
Amazon: A DCF valuation in late October 2014



# Numbers person or Story teller?

Vive le difference!

# Left Brain and Right Brain



# Different styles of thinking?

The side of the brain we tend to use more may determine our learning styles, not to mention instructors' teaching methods:

## LEFT SIDE



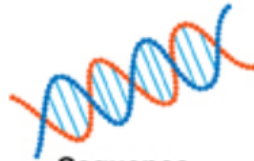
### Linear

Processes information by taking pieces, lining them up, and arranging them in a logical order to draw conclusions.



### Reality-based

Deals with reality the way it is. When affected by the environment, adjustment can be easily made.



### Sequence

Processes information in order. This makes for easy daily planning and accomplishing tasks.

$$f(x) = \frac{x}{3} + 5$$

### Symbolic

Processing symbols is no problem such as letters, words, and mathematical notation.

## RIGHT SIDE



### Holistic

Processes information by starting with the answer. It sees the big picture first, not the details.



### Fantasy-oriented

Processes information based on what they think the answer is. Often they find the answer intuitively.



### Random

Processes information through random processing. Tasks are done randomly and in parts.



### Concrete

Processing requires things to be concrete such as feeling, seeing, or touching the real object.

Which side of your brain is stronger? A test..

Look at the chart and say the COLOUR not the word

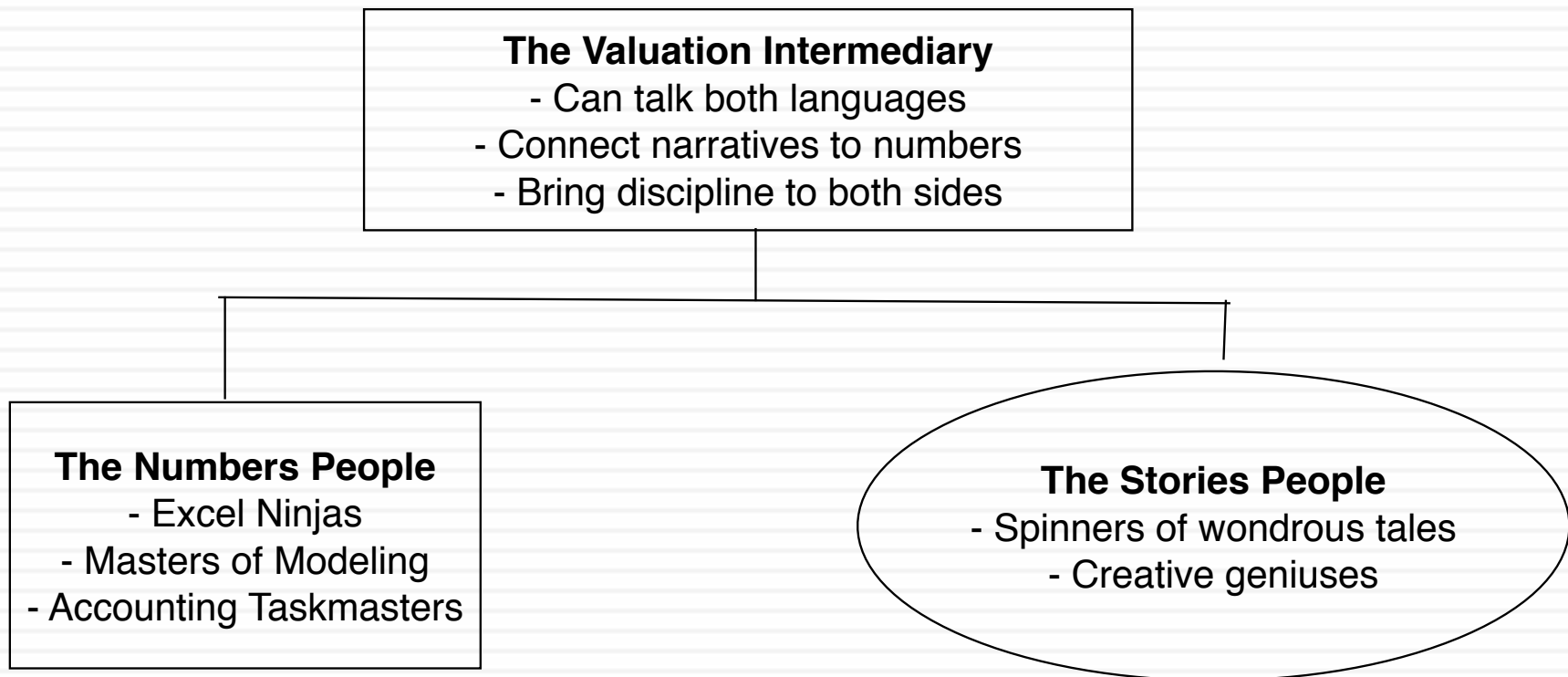
<b>YELLOW</b>	<b>BLUE</b>	<b>ORANGE</b>
<b>BLACK</b>	<b>RED</b>	<b>GREEN</b>
<b>PURPLE</b>	<b>YELLOW</b>	<b>RED</b>
<b>ORANGE</b>	<b>GREEN</b>	<b>BLACK</b>
<b>BLUE</b>	<b>RED</b>	<b>PURPLE</b>
<b>GREEN</b>	<b>BLUE</b>	<b>ORANGE</b>



## Setting up the contrast

“Jargon seems to be (the only place) where the right brain and the left brain meet”

# The Set Up





# Dueling Perspectives



- Numbers people believe that valuation should be about numbers and that narratives/stories are distractions that bring in irrationalities into investing.
- Narratives people believe that valuation and investing is really about great stories and that it is the height of hubris to try to estimate numbers, when you face uncertainty.

# The Great Divide



- They speak different languages: Numbers and narrative people speak different languages and often don't understand what the other side is saying.
- Each side thinks it occupies the high ground: Each side thinks that it occupies the high ground and believes in the worst caricatures it can of the other side.



# The Numbers People

Just the facts, ma'am!

# The Numbers Game: The building blocks

- Accounting: The game starts with accounting statements, with more value to greater detail. Not only is every piece of the accounting statement taken apart, but so is every footnote. FASB pronouncements are studied like the scriptures, parsed for meaning.
- Modeling: The next step is modeling the company, again in as much depth as possible.
- Data: Judgments based on data are valued more than judgments based upon intuition or experience.
- Valuation: The final aspect is valuation, with mastery of model mechanics equating to better valuation.

# 1. Accounting Mission Creep

- Accounting earnings are viewed as measures of economic earnings: Accounting measures of earnings at every level (EBITDA, operating income and net income) are given special respect and treat them as economic earnings.
- Accounting book value for assets is treated as having significant meaning, used by some as a proxy for invested capital in a business and by others as a measure of fair value in the business.
- Accounting rule makers are considered the arbiters of that which is right and reasonable.

## 2. The power of modeling

1. More/Bigger is better: More line items are viewed as better than less, and detail is a proxy for precision.
2. Excel is King: Mastering Excel is considered not only a critical step in understanding valuation but often the only step. In this world,
  - a. Macros are good.
  - b. Keyboard shortcuts are what separate exceptional analysts from average ones.

### 3. Data: Playing Billy Beane

- Data is plentiful: This trend is reinforced by the amount of data that we have available and the ease with which we can access that data.
- Successful role models: In the age of Moneyball and Nate Silver, there is special respect for those whose views are data driven. They are viewed as more objective and less driven by rules of thumb/traditions.
- Statistics 101: Statistics is designed to make sense of large and contradictory data, and it seems almost tailor-made for the problems we face in valuation and investing.

## 4. The Valuation Fix

- Valuation Certifications: As the alphabet soup of certifications increases (CFA, CVA etc.), there is a sense that your valuation expertise increases proportionally with the number of certifications after your name.
- The DCF God: It is almost an article of faith in legal circles, accounting rule making bodies and banks that a DCF valuation is the only way to estimate value.
- D + CF = DCF: If you have a D(iscount rate) and a C(ash) F(low), you have a DCF.



# The delusions of the number crunchers

- The illusion of precision: If you use numbers, you are being more precise than when you don't, and the more numbers you use, the more precise you become.
- The illusion of “no bias”: Numbers don't lie and data does not have an agenda. Thus, analysts who use numbers are more likely to be unbiased.
- The illusion of control: If you put a number on something (your cash flows, expected growth rate, risk etc.), you can control it better.

# All numbers, all the time: The dangerous limits

- Boring and unconvincing (but intimidating): A valuation that is all numbers and no narrative will not draw in skeptics or convince investors. It may intimidate them (and that may very well be the reason you use them).
- Miss internal inconsistencies: By letting your valuation be all about the numbers, you may miss a chance at spotting internal inconsistencies or serious problems.
- The Echo Chamber: If you are surrounded by other numbers people (quants), it becomes easy to find agreement about using valuation practices that may be patently wrong or are noisy.



# The Story People

“You're never going to kill storytelling, because it's built into the human plan. We come with it.”

# The Narrative Game



- In the narrative game, you have a story to tell about an investment and if it has enough of a hook to it, hope to draw investors into the investment.
- You are measured by how well your story is structured and how you tell it, rather than the numbers that may or may not be backing it.
- At best, the numbers, if they are used, are almost an after thought at the end of the story, rather than being tied to the story.

# 1. The power of the anecdote

- Research in psychology point to an undeniable fact. Human beings respond better to stories than to abstractions of numbers. That reflects evolution, and as one psychologist put it, “*our brains our belief engines that employ association learning to seek and find patterns*”. Anecdotal evidence is as old as man, but the scientific method is only a few hundred years in the making.
- This is true in business as well, where story telling often is much more effective at selling people on an investment than the numbers that may be presented.
- In business education, the use of cases shows the power of story telling in conveying larger themes. More generally, as a teacher, I am well aware of the power of good anecdote to back up theory, models or science.

## 2. The weight of experience

- Building on the theme of story telling, a story told by someone who was part of it is viewed as much more credible than one told by someone from the outside. And success in the past experience is viewed as a predictor of future success, even if it is not.
- And psychological studies indicate that it can affect choices. Quoting, “In the **case of decisions from description, people make choices as if they overweight the probability of rare events**, as described by prospect theory. We found that **in the case of decisions from experience, in contrast, people make choices as if they underweight the probability of rare events**”.

### 3. The appeal to emotions/ common sense



- The best stories have emotional pulls, that drag listeners in because they can relate to that emotion.
- The emotions that these stories appeal to are generally a mix of the crass (greed, envy) and the noble (change the world, do good, alter the (bad) status quo).

# The delusions of the story tellers

1. Number crunchers don't dream in technicolour: Creativity and Numbers are mutually exclusive. If you talk about numbers, you cannot be creative, and if you are being creative, talk about numbers only crimps your creative instincts.
2. Creativity is deserving of reward: If your story is good, your business will success and your investment will pay off.
3. Experience is the best teacher: If you have pulled this off before (started and succeeded at running a business), your story is more believable.



# All narrative, all the time: The dangerous limits

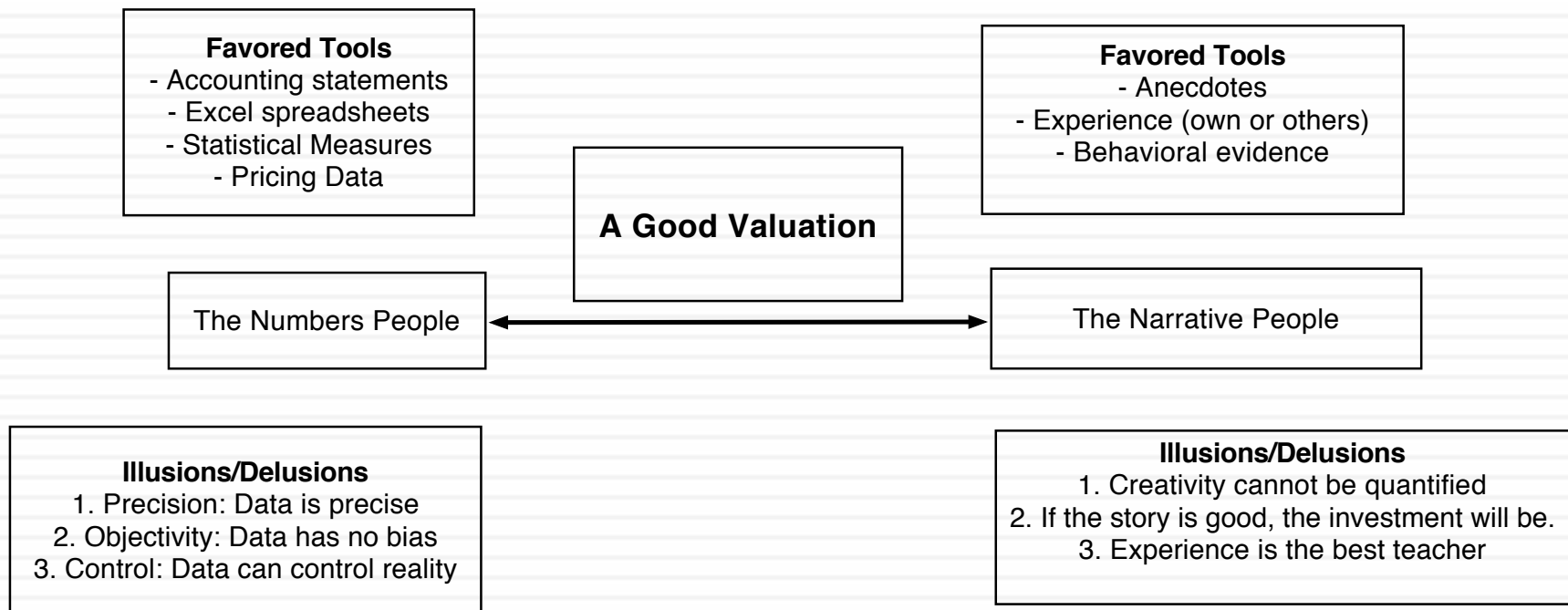
- Fantasyland & Fairy tales: A narrative-based valuation, which has little, if any, numbers to back it up, can very quickly veer away from reality into fantasy.
- The Echo Chamber: If your circle is filled with people who are also unconstrained story tellers, not only do you feed on each other, but the stories tend to get more and more fantastic.
- No measurement mechanism or feedback loop: If you don't use numbers in any meaningful way to sell an investment, you have no way of measuring whether your narrative is holding up and what you might need to do to set it right, if it is not.



# Valuation as a bridge

“Be transparently wrong than opaquely right”

# Bridging the Gap



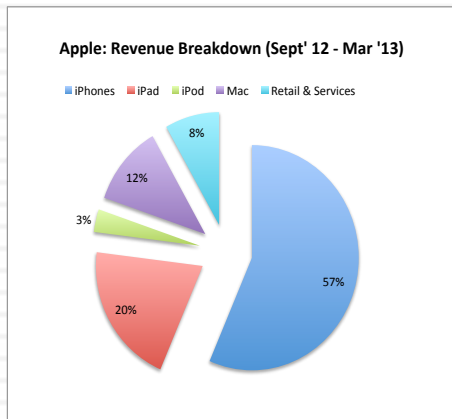
# Step 1: Survey the landscape



- Before we start weaving narratives about a company's future, it behooves us to first understand the company's business model and where it stands right now (in terms of financials, business mix and the story).
- That understanding will require
  - ▣ Looking through financial statements
  - ▣ Assessing the overall market and competitors today
  - ▣ Trying out or talking to people involved: employees involved in producing the product/service as well as users.

## Apple's financial balance sheet: April 23, 2013

Revenues tilting towards smartphones.  
Revenue growth is slowing & margins are shrinking.



Rumors of new products (iTV, iWatch) continue, but "market" optimism about introduction/success have faded. (See market cap to right)

*Cash balance has climbed by \$35 billion in last 6 months to hit \$145 billion. In April 2013, the cash balance was 35% of the value of the company.*

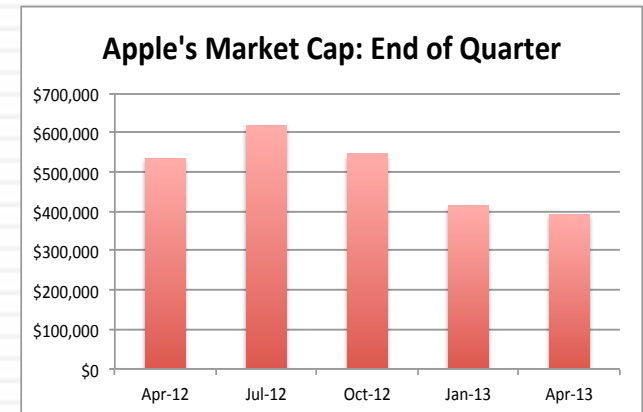
### Assets

1. Operating Businesses: Existing
  - a. Computers & Peripherals
  - b. Smartphones & Tablets
  - c. Retail & Services
2. Value of growth potential
3. Cash

### Liabilities

Debt  
Company has never used conventional debt. It has a small lease commitment.

Equity



*Apple's market capitalization dropped by more than \$200 billion between July 2012 and April 23, 2013*

# Twitter: Current Financials and Potential Market

## Twitter's Income Statement

	2010	2011	2012	2012 (6 mths)	2013 (6 mths)	Trailing 12 months
Revenues	\$28.3	\$106.3	\$316.9	\$122.4	\$253.6	\$448.2
R&D expenses	\$29.3	\$80.2	\$119.0	\$46.3	\$111.8	\$184.5
Operating income	-\$67.5	-\$127.4	-\$77.1	-\$47.0	-\$62.8	-\$92.9
Operating income adjusted for R&D & Leases					\$4.3	
Adjusted EBITDA (Net Loss+Taxes+Int exp+ Depr+Stock-based employee compensation)	-\$51.2	-\$42.8	\$21.2	\$6.7	\$21.4	\$35.9

## The Online Advertising Market

	2011		2012		2013	
	%	\$	%	\$	%	\$
Google	32.09%	\$27.74	31.46%	\$32.73	33.24%	\$38.83
Facebook	3.65%	\$3.15	4.11%	\$4.28	5.04%	\$5.89
Yahoo!	3.95%	\$3.41	3.37%	\$3.51	3.10%	\$3.62
Microsoft	1.27%	\$1.10	1.63%	\$1.70	1.78%	\$2.08
IAC	1.15%	\$0.99	1.39%	\$1.45	1.47%	\$1.72
AOL	1.17%	\$1.01	1.02%	\$1.06	0.95%	\$1.11
Amazon	0.48%	\$0.41	0.59%	\$0.61	0.71%	\$0.83
Pandora	0.28%	\$0.24	0.36%	\$0.37	0.50%	\$0.58
Twitter	0.16%	\$0.14	0.28%	\$0.29	0.50%	\$0.58
LinkedIn	0.18%	\$0.16	0.25%	\$0.26	0.32%	\$0.37
Millennial Media	0.05%	\$0.04	0.07%	\$0.07	0.10%	\$0.12
Other	55.59%	\$48.05	55.47%	\$57.71	52.29%	\$61.09
Total Market	100%	\$86.43	100.00%	\$104.04	100.00%	\$116.82

## Twitter's Balance Sheet

	2011	2012	2013: Qtr 2	2013: Pro forma
Cash & ST Investments	\$549.5	\$424.9	\$375.0	\$375.0
Property & Equipment	\$61.9	\$185.6	\$242.6	\$242.6
Intangible assets	\$6.4	\$3.8	\$14.4	\$14.4
Goodwill	\$36.8	\$68.8	\$163.7	\$163.7
Capitalized R&D				\$248.7
<b>Total Assets</b>	<b>\$720.7</b>	<b>\$831.6</b>	<b>\$964.1</b>	<b>\$964.1</b>
Capital Leases	\$21.1	\$65.7	\$80.1	\$80.1
Capitalized Op Leases				\$127.1
Preferred Stock	\$835.1	\$835.4	\$835.4	\$0.0
Shareholders equity	-\$201.8	-\$248.2	-\$164.4	\$716.9

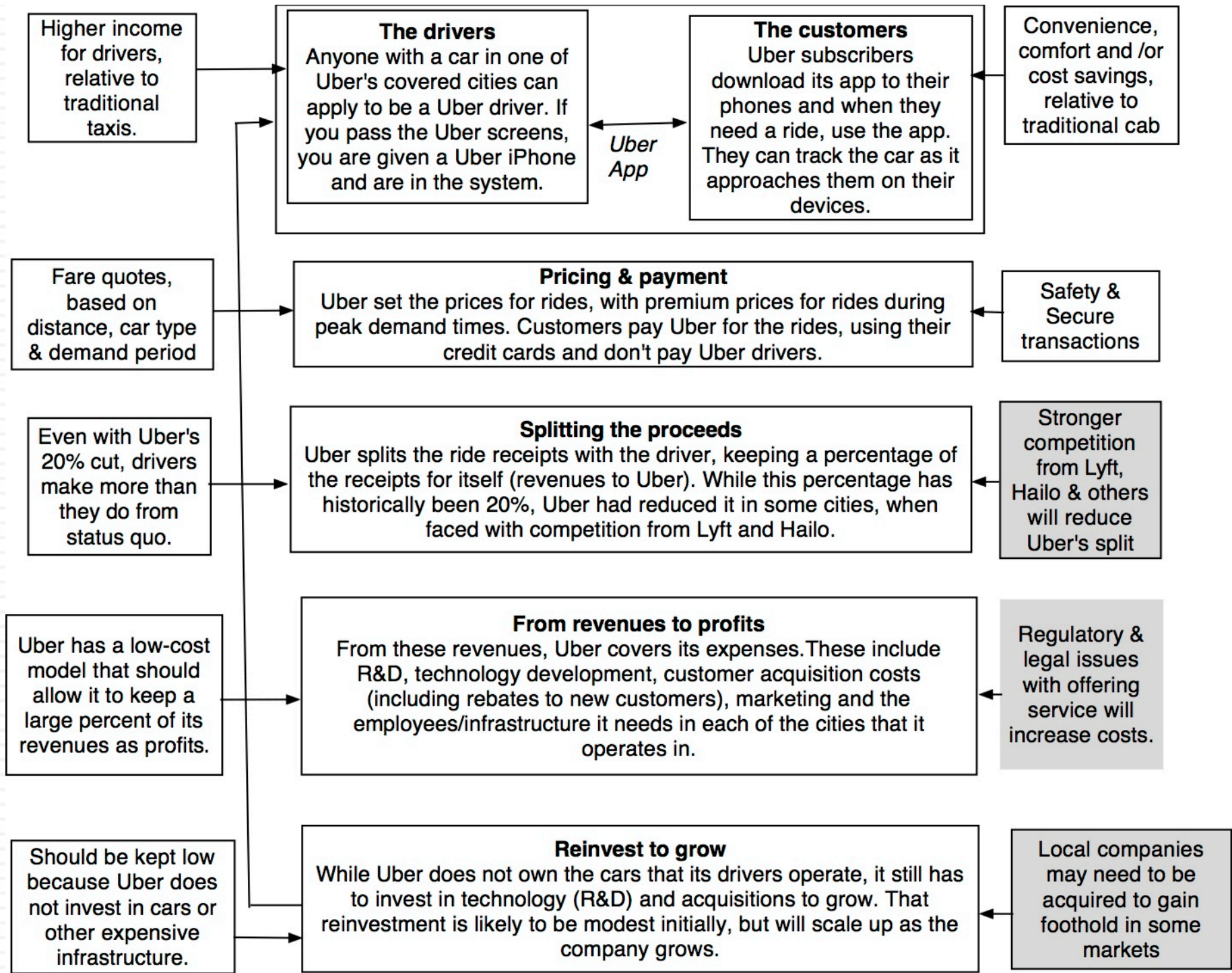
## Twitter Users

Company	No of users
Facebook	1110
Google	1093
LinkedIn	225
Twitter	240

## Annual growth rate in Global Advertising Spending

Online advertising share of market		2.00%	2.50%	3.00%	3.50%	4.00%
		20%	\$124.78	\$131.03	\$137.56	\$144.39
25%	\$155.97	\$163.79	\$171.95	\$180.49	\$189.40	
30%	\$187.16	\$196.54	\$206.34	\$216.58	\$227.28	
35%	\$218.36	\$229.30	\$240.74	\$252.68	\$265.16	
40%	\$249.55	\$262.06	\$275.13	\$288.78	\$303.04	





Higher income for drivers, relative to traditional taxis.

**The drivers**  
Anyone with a car in one of Uber's covered cities can apply to be a Uber driver. If you pass the Uber screens, you are given a Uber iPhone and are in the system.

**The customers**  
Uber subscribers download its app to their phones and when they need a ride, use the app. They can track the car as it approaches them on their devices.

Convenience, comfort and /or cost savings, relative to traditional cab

Fare quotes, based on distance, car type & demand period

**Pricing & payment**  
Uber set the prices for rides, with premium prices for rides during peak demand times. Customers pay Uber for the rides, using their credit cards and don't pay Uber drivers.

Safety & Secure transactions

Even with Uber's 20% cut, drivers make more than they do from status quo.

**Splitting the proceeds**  
Uber splits the ride receipts with the driver, keeping a percentage of the receipts for itself (revenues to Uber). While this percentage has historically been 20%, Uber had reduced it in some cities, when faced with competition from Lyft and Hailo.

Stronger competition from Lyft, Hailo & others will reduce Uber's split

Uber has a low-cost model that should allow it to keep a large percent of its revenues as profits.

**From revenues to profits**  
From these revenues, Uber covers its expenses. These include R&D, technology development, customer acquisition costs (including rebates to new customers), marketing and the employees/infrastructure it needs in each of the cities that it operates in.

Regulatory & legal issues with offering service will increase costs.

Should be kept low because Uber does not invest in cars or other expensive infrastructure.

**Reinvest to grow**  
While Uber does not own the cars that its drivers operate, it still has to invest in technology (R&D) and acquisitions to grow. That reinvestment is likely to be modest initially, but will scale up as the company grows.

Local companies may need to be acquired to gain foothold in some markets

*Uber App*

## Step 2: Create a narrative for the future



- Every valuation starts with a narrative, a story that you see unfolding for your company in the future.
- In developing this narrative, you will be making assessments of your company (its products, its management), the market or markets that you see it growing in, the competition it faces and will face and the macro environment in which it operates.
  - ▣ Rule 1: Keep it simple.
  - ▣ Rule 2: Keep it focused.



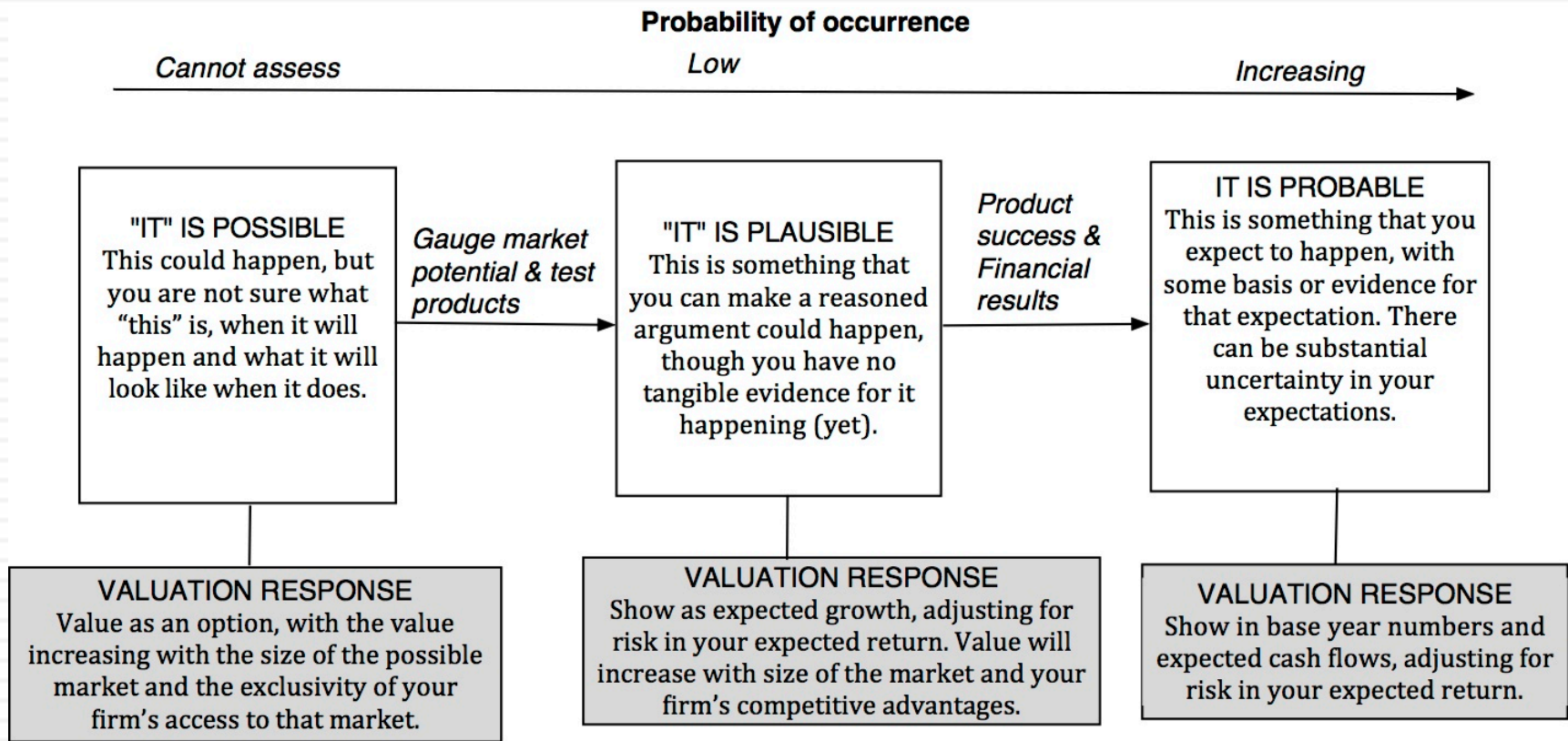
# Three narratives: Apple, Twitter and Uber

1. **Apple (April 2013):** Apple is a cash machine that derives much of its value from the smartphone business that is seeing growth slow and competition increase. Its size will make it difficult to create disruption that will create meaningful high growth.
2. **Twitter (October 2013):** Twitter is an innovative social media company which will be successful in its quest in online advertising, but because of its structure (140 characters), it will not be a dominant player.
3. **Uber (June 2014):** Uber will expand the car service market moderately, primarily in urban environments, and use its competitive advantages to get a significant but not dominant market share and maintain its profit margins.

# Be open to counter narratives: Bill Gurley's Uber narrative

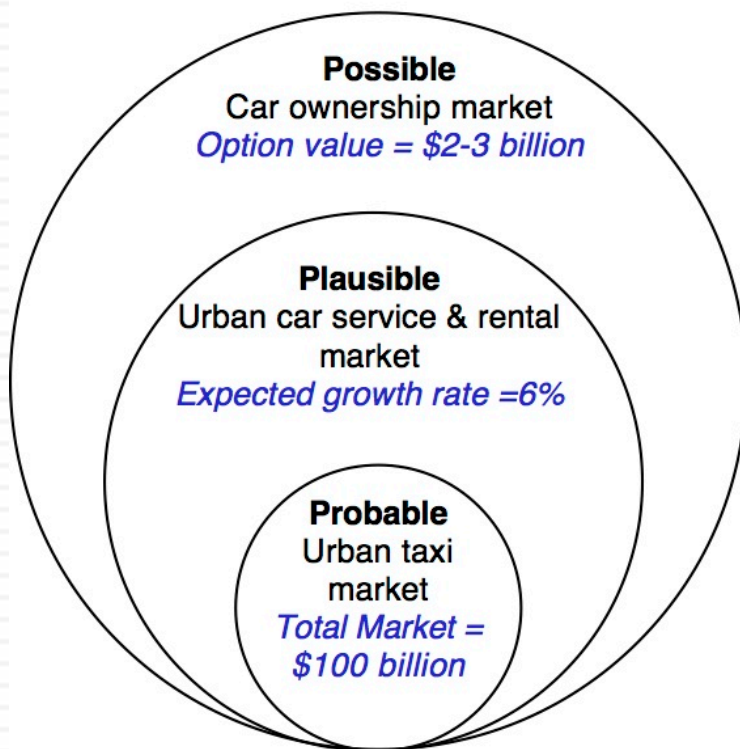
- ❑ Not just car service company.: Uber is a car company, not just a car service company, and there may be a day when consumers will subscribe to a Uber service, rather than own their own cars. It could also expand into logistics, i.e., moving and transportation businesses.
- ❑ Not just urban: Uber can create new demands for car service in parts of the country where taxis are not used (suburbia, small towns).
- ❑ Global networking benefits: By linking with technology and credit card companies, Uber can have global networking benefits.

# Step 3: Check the narrative against history, economic first principles & common sense

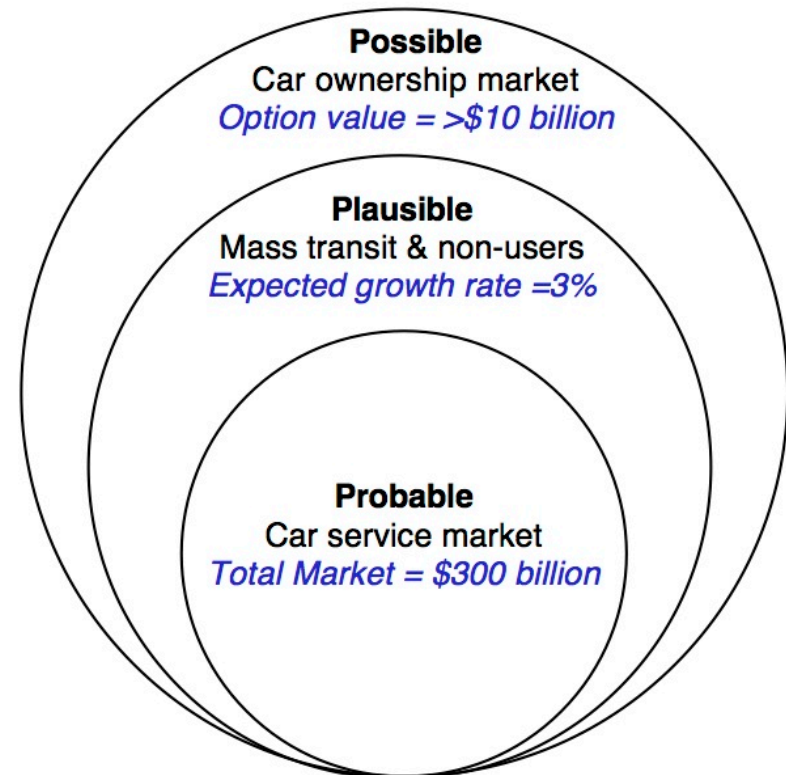


# Uber: Possible, Plausible and Probable

Uber (My valuation))



Uber (Bill Gurley)

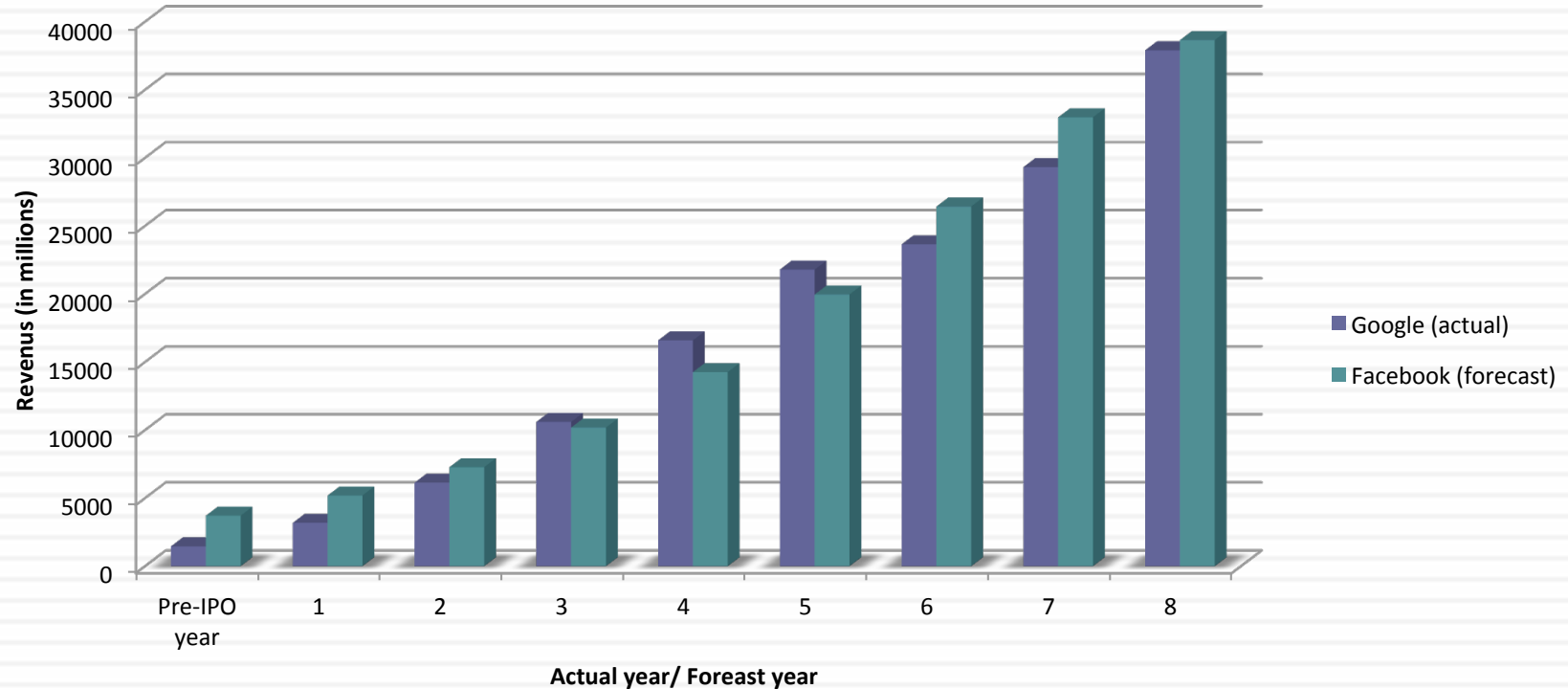


# 1. Check the macro story – Backing out imputed revenues from market prices

Company	Market Capitalization	Enterprise Value	Current Revenues	Breakeven Revenues (2023)	% from Online Ads (2012)	Imputed Online Ad Revenue (2023)	Cost of capital	Target margin
Google	\$291,586.00	\$240,579.00	\$56,594.00	\$168,336.00	87.07%	\$146,570.16	10%	22.49%
Facebook	\$119,769.00	\$111,684.00	\$6,118.00	\$90,959.00	84.08%	\$76,478.33	10%	29.99%
Yahoo!	\$34,688.00	\$29,955.00	\$4,823.00	\$17,695.00	100%	\$17,695.00	10%	25.00%
Linkedin	\$27,044.00	\$26,171.00	\$1,244.00	\$32,110.00	80.41%	\$25,819.65	10%	25.00%
Twitter (Est)	\$12,000.00	\$11,000.00	\$448.00	\$7,846.00	90.00%	\$7,061.40	10%	25.00%
Pandora	\$4,833.00	\$4,774.00	\$528.00	\$3,085.00	87.84%	\$2,709.86	10%	25.00%
Yelp	\$4,422.00	\$4,325.00	\$179.00	\$2,825.00	94.31%	\$2,664.26	10%	25.00%
Zillow	\$3,192.00	\$3,060.00	\$152.00	\$1,984.00	25.83%	\$512.47	10%	25.00%
AOL	\$2,586.00	\$2,208.00	\$2,211.00	\$10,055.00	64.72%	\$6,507.60	10%	9.32%
Retailmenot	\$1,718.00	\$1,644.00	\$169.00	\$1,605.00	100%	\$1,605.00	10%	25.00%
OpenTable	\$1,597.00	\$1,505.00	\$173.77	\$1,361.38	74.22%	\$1,010.42	10%	25.00%
<b>US based</b>	<b>\$503,435.00</b>	<b>\$436,905.00</b>	<b>\$72,639.77</b>	<b>\$337,861.38</b>	<b>\$8.88</b>	<b>\$288,634.13</b>		
Baidu	\$53,589.00	\$49,961.00	\$4,182.00	\$15,526.00	99.73%	\$15,484.08	10%	25.00%
Sohu.com	\$3,166.00	\$2,540.00	\$1,231.00	\$1,338.00	36.33%	\$486.10	10%	21.45%
Naver	\$17,843.00	\$17,595.00	\$133.00	\$11,227.00	62.94%	\$7,066.27	10%	25.00%
Yandex	\$12,654.00	\$11,872.00	\$1,065.00	\$7,684.00	98%	\$7,505.73	10%	25.00%
<b>Global</b>	<b>\$590,687.00</b>	<b>\$518,873.00</b>	<b>\$79,250.77</b>	<b>\$373,636.38</b>	<b>\$11.85</b>	<b>\$319,176.31</b>		

## 2. Measure up against the most successful companies in your “business”

Google's actual revenues versus Facebook Revenue Forecasts (at IPO)

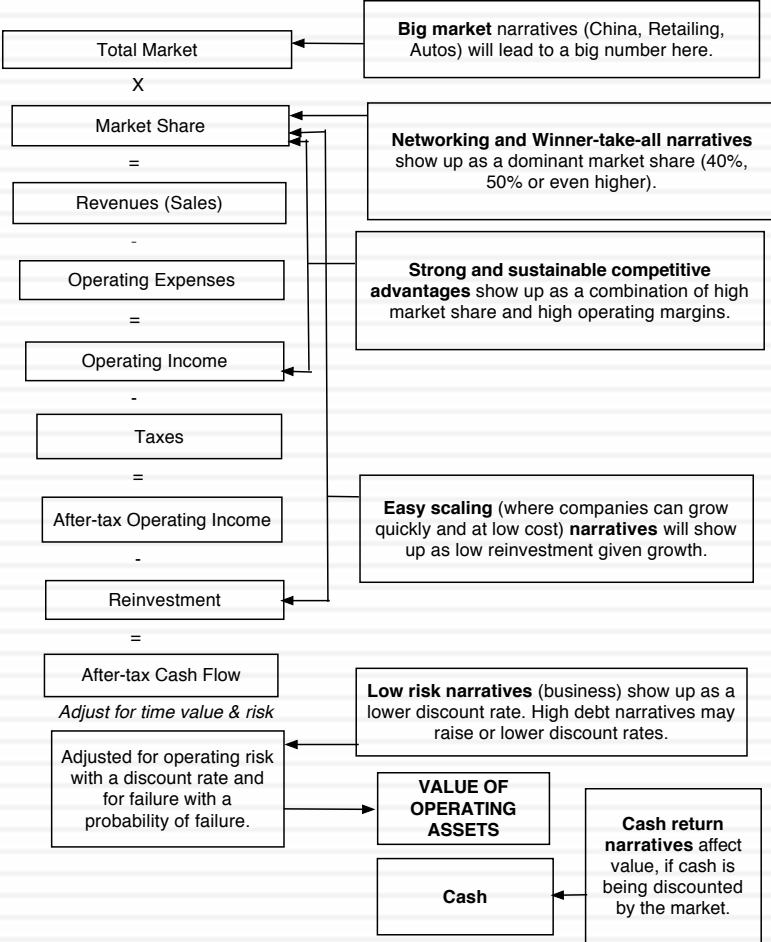


### 3. Identify the losers

- Apple: If Apple continues to dominate the smart phone business and generate high operating margins, the losers will be the other smart phone companies. (Do you buy that?)
- Twitter: If Twitter ends up with a market share of 20-25% of the online ad market, the losers will have to be Google and Facebook. (If you are also valuing those companies, are you showing dropping market shares for these companies?)
- Uber: If Uber succeeds as a urban car service company, that will be devastating for traditional taxi cab companies (Work through the consequences for taxi cab medallion prices). If it succeeds as a logistics company, that will be bad for automobile companies. (Do you think that you should sell them short?)

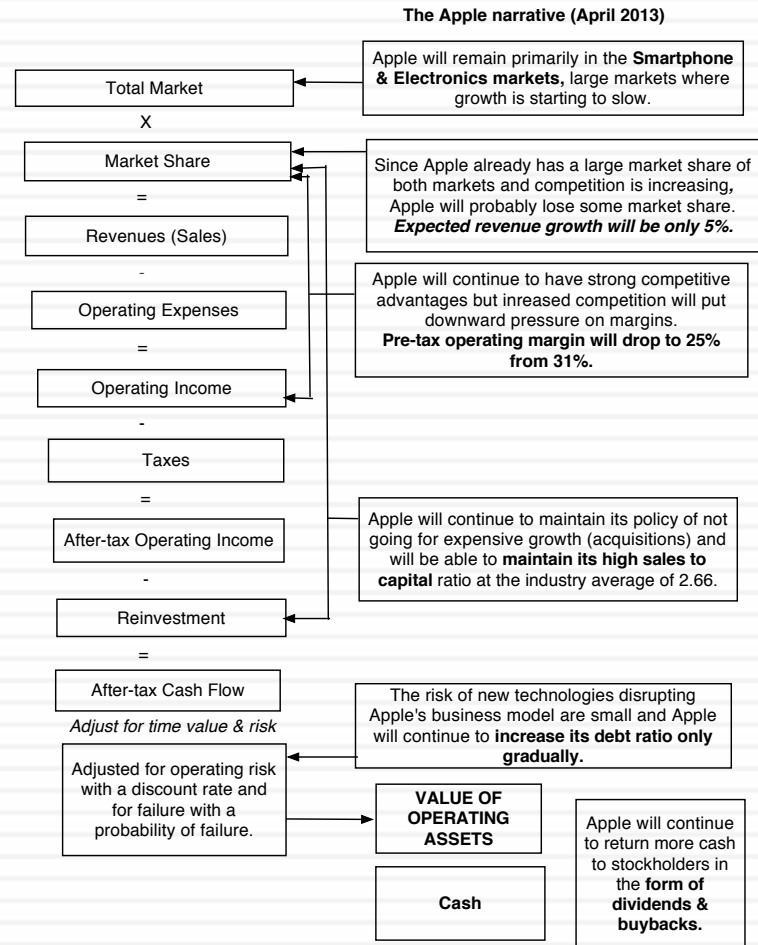


# Step 4: Connect your narrative to key drivers of value

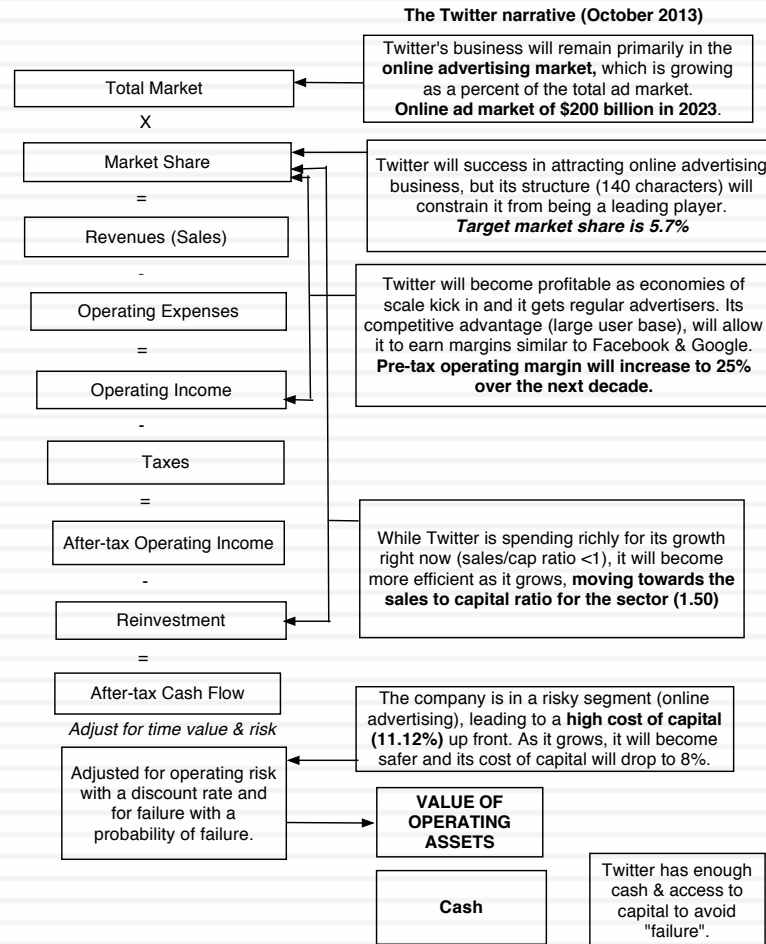




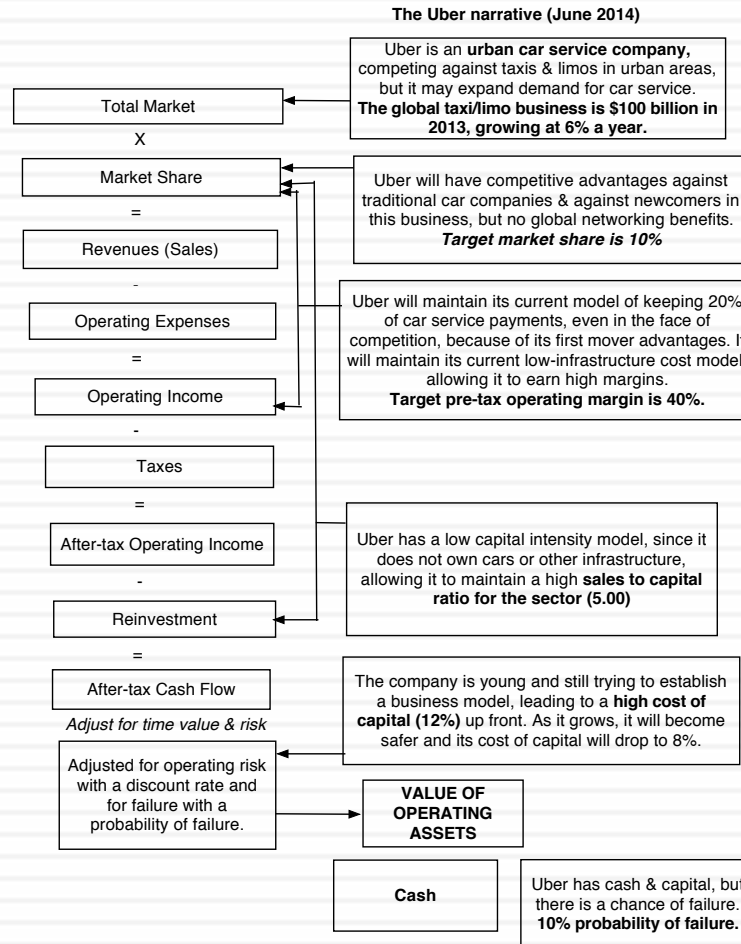
# Apple (April 2013): From narrative to numbers



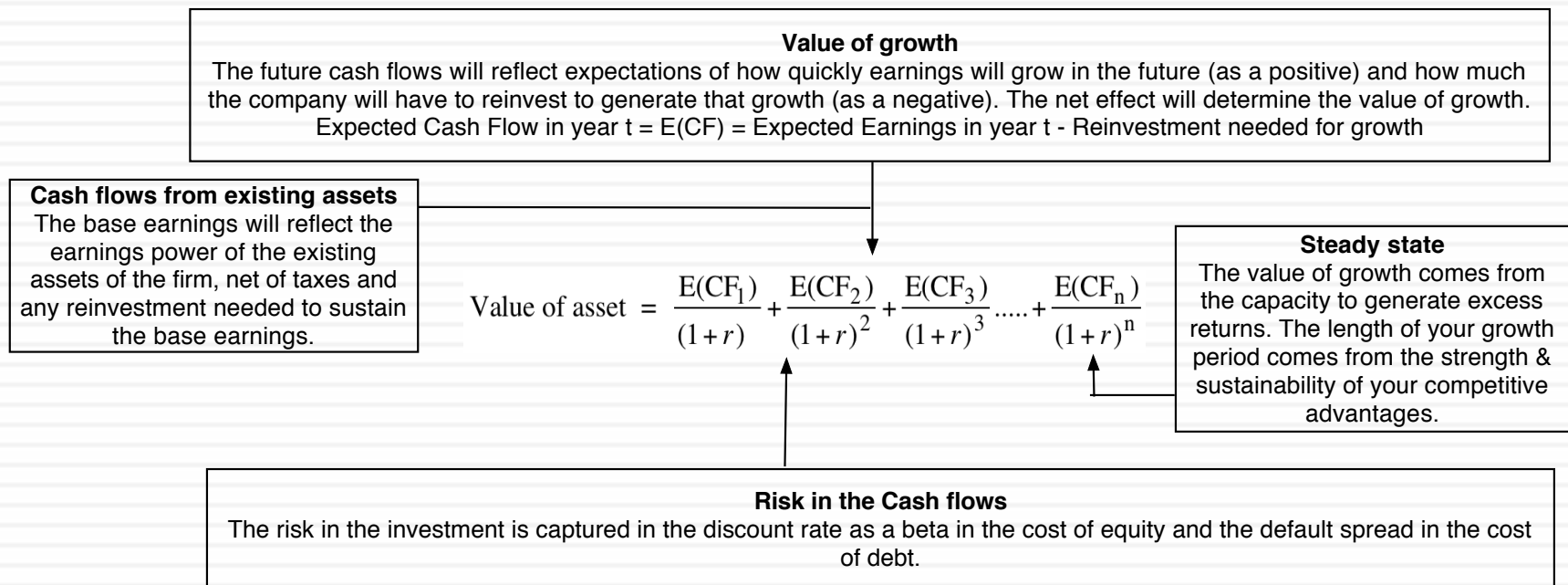
# Twitter: From narrative to numbers



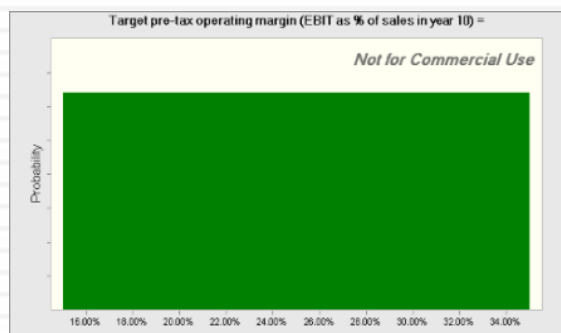
# Uber: From narrative to numbers



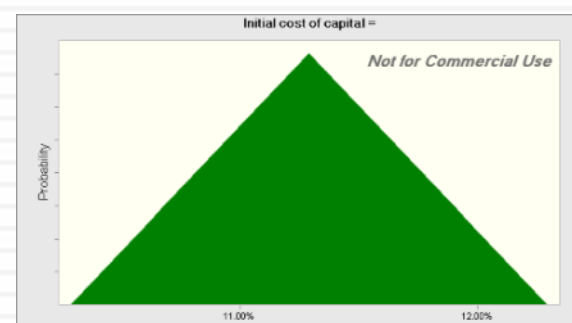
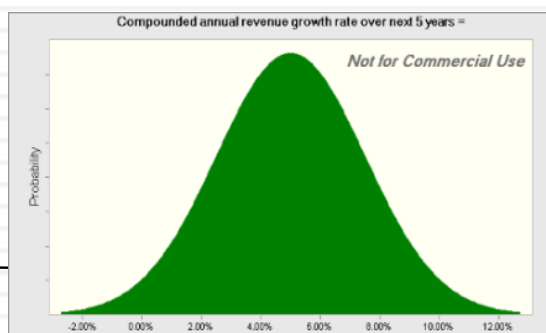
# Step 5: Value the company



Correlations across assumptions make bad outcomes more likely to occur together, low revenue growth -> low margin -> high cost of capital



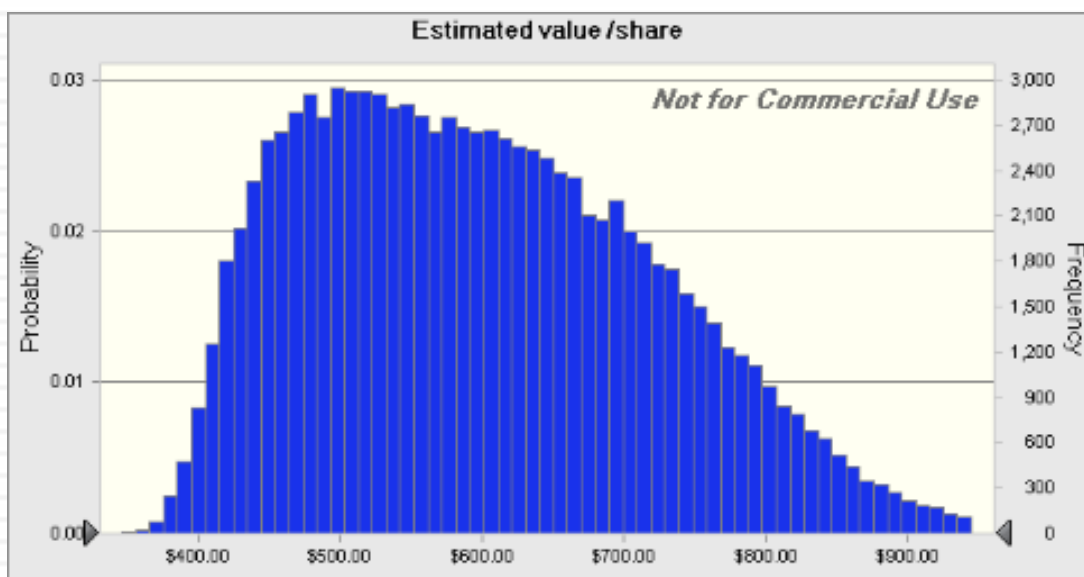
Correlation = 0.70



Pre-tax Operating Margin  
 Uniformly distributed, min=15%, max=35%

Revenue growth (next 5 years)  
 Normally distributed, with  
 avg=5%,sd=2.5%

Cost of capital  
 Triangular distribution, min=10.29%, max  
 =11.29%



Percentiles:	Forecast values
0%	\$346.90
10%	\$448.34
20%	\$483.99
30%	\$517.91
40%	\$552.20
50%	\$588.45
60%	\$625.46
70%	\$665.16
80%	\$711.47
90%	\$771.57
100%	\$1,182.70

Statistics:	Forecast values
Trials	100,000
Base Case	\$588.25
Mean	\$600.74
Median	\$588.45
Minimum	\$346.90
Maximum	\$1,182.70

Starting numbers

	Last 10K	Trailing 12 month
Revenues	\$316.93	\$534.46
Operating income	-\$77.06	-\$134.91
Adjusted Operating Income		\$7.67
Invested Capital		\$955.00
Adjusted Operatng Margin		1.44%
Sales/ Invested Capital		0.56
Interest expenses	\$2.49	\$5.30

Twitter Pre-IPO Valuation: October 27, 2013

Revenue growth of 51.5% a year for 5 years, tapering down to 2.5% in year 10

Pre-tax operating margin increases to 25% over the next 10 years

Sales to capital ratio of 1.50 for incremental sales

**Stable Growth**  
 g = 2.5%; Beta = 1.00;  
 Cost of capital = 8%  
 ROC = 12%;  
 Reinvestment Rate = 2.5%/12% = 20.83%

Terminal Value<sub>10</sub> = 1466 / (.08 - .025) = \$26,657

	1	2	3	4	5	6	7	8	9	10
Revenues	\$ 810	\$1,227	\$1,858	\$2,816	\$4,266	\$6,044	\$7,973	\$9,734	\$10,932	\$11,205
Operating Income	\$ 31	\$ 75	\$ 158	\$ 306	\$ 564	\$ 941	\$1,430	\$1,975	\$ 2,475	\$ 2,801
Operating Income after tax	\$ 31	\$ 75	\$ 158	\$ 294	\$ 395	\$ 649	\$ 969	\$1,317	\$ 1,624	\$ 1,807
- Reinvestment	\$ 183	\$ 278	\$ 421	\$ 638	\$ 967	\$1,186	\$1,285	\$1,175	\$ 798	\$ 182
FCFF	\$(153)	\$(203)	\$(263)	\$(344)	\$(572)	\$(537)	\$(316)	\$ 143	\$ 826	\$ 1,625

*Terminal year (11)*

EBIT (1-t)	\$ 1,852
- Reinvestment	\$ 386
FCFF	\$ 1,466

Operating assets	\$9,705
+ Cash	321
+ IPO Proceeds	1295
- Debt	214
Value of equity	11,106
- Options	713
Value in stock	10,394
/ # of shares	582.46
Value/share	\$17.84

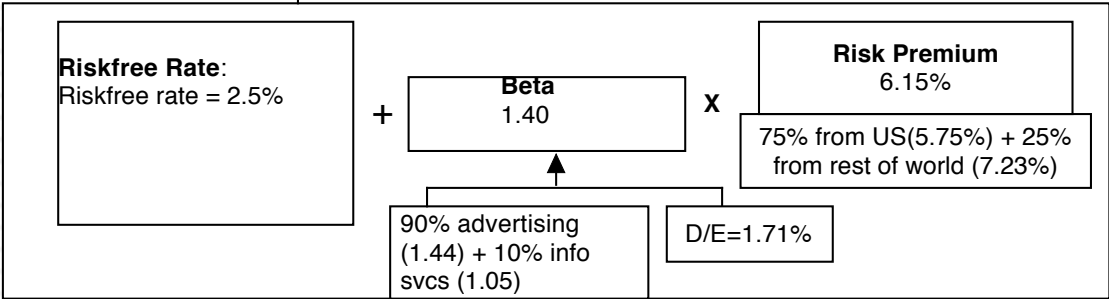
Cost of capital = 11.12% (.981) + 5.16% (.019) = 11.01%

Cost of capital decreases to 8% from years 6-10

Cost of Equity  
11.12%

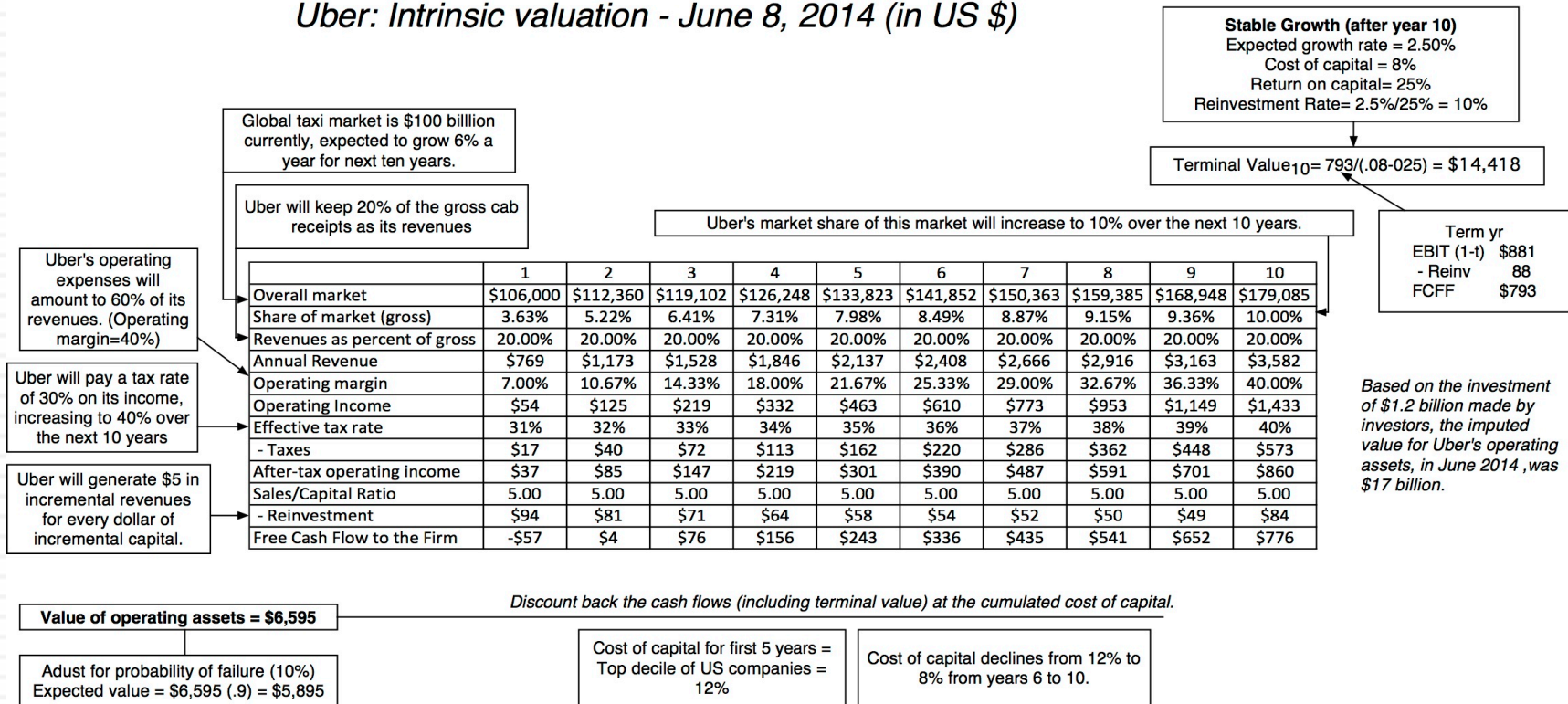
Cost of Debt  
(2.5% + 5.5%)(1 - .40)  
= 5.16%

Weights  
E = 98.1% D = 1.9%



# Uber: Valuation

## Uber: Intrinsic valuation - June 8, 2014 (in US \$)



# Step 6: Keep the feedback loop

	<i>Uber (Gurley)</i>	<i>Uber (Gurley Mod)</i>	<i>Uber (Damodaran)</i>
Narrative	Uber will <u>expand the car service market substantially</u> , bringing in mass transit users & non-users from the suburbs into the market, and use its <u>networking advantage</u> to gain a <u>dominant market share</u> , while maintaining its revenue slice at 20%.	Uber will <u>expand the car service market substantially</u> , bringing in mass transit users & non-users from the suburbs into the market, and use its <u>networking advantage</u> to gain a <u>dominant market share</u> , while cutting prices and margins (to 10%).	Uber will expand the car service market moderately, primarily in urban environments, and use its <u>competitive advantages</u> to get a <u>significant but not dominant market share</u> and maintain its revenue slice at 20%.
Total Market	\$300 billion, growing at 3% a year	\$300 billion, growing at 3% a year	\$100 billion, growing at 6% a year
Market Share	40%	40%	10%
Uber's revenue slice	20%	10%	20%
Value for Uber	\$53.4 billion + Option value of entering car ownership market (\$10 billion+)	\$28.7 billion + Option value of entering car ownership market (\$6 billion+)	\$5.9 billion + Option value of entering car ownership market (\$2-3 billion)





## Narrative breaks, shifts & changes

“When my information changes, I alter my conclusions. What do you do, sir?”

*Lord Keynes*

# Why narratives change

1. Earnings reports: Every earnings announcement from a firm is a chance to reassess the narrative about the firm.
2. Corporate actions: Any action that changes the basic construct for the firm, including divestitures, acquisitions and splits offs.
3. Management change: A new CEO, board of directors or other significant management change.
4. Macroeconomic changes: A change in the macroeconomic environment, leading to shifts in interest rates, inflation, exchange rates or other variables.
5. Political changes: A change in government, political system or any structural shift.

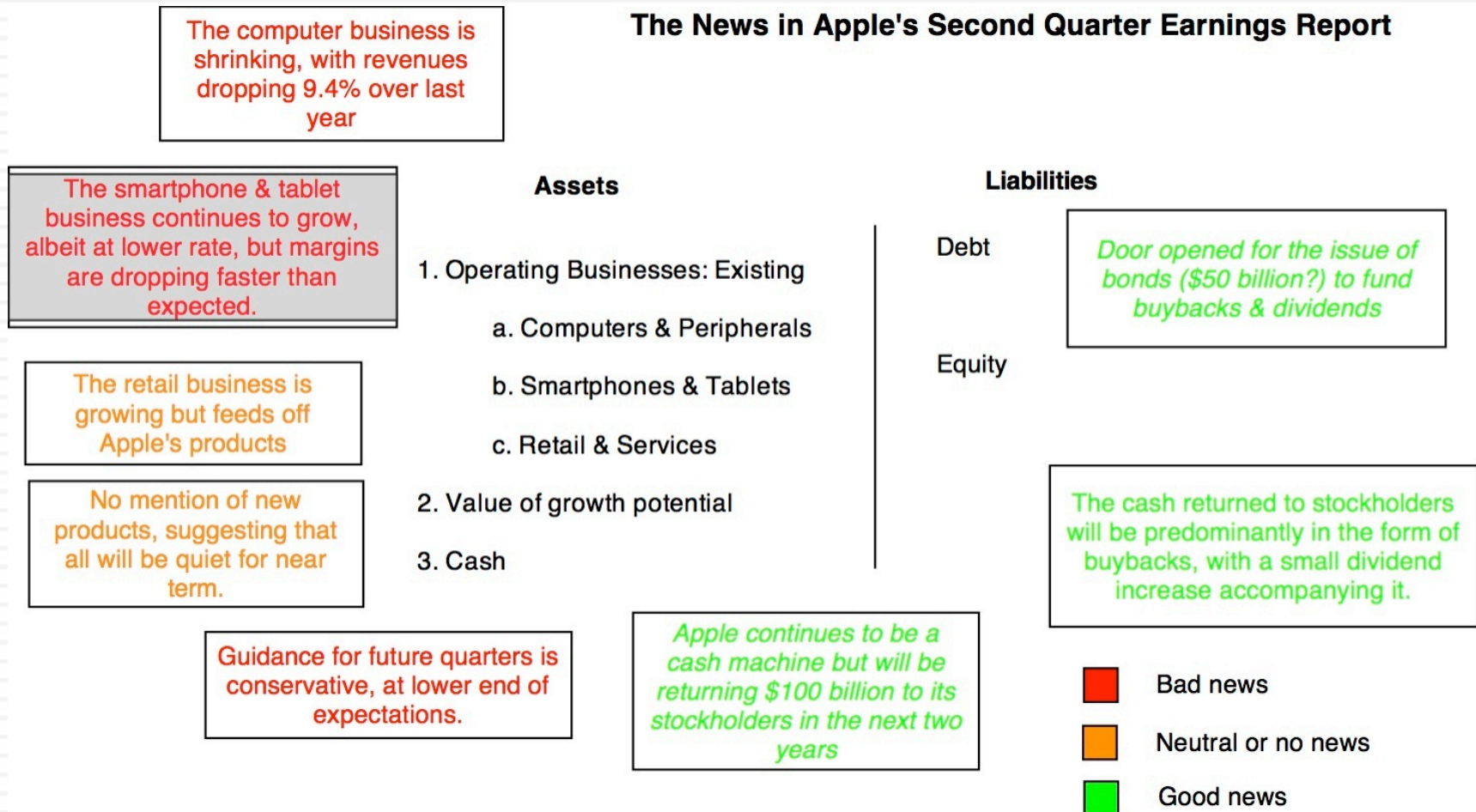
# How narratives change

55

Narrative Break/End	Narrative Shift	Narrative Change (Expansion or Contraction)
Events, external (legal, political or economic) or internal (management, competitive, default), that can cause the narrative to break or end.	Improvement or deterioration in initial business model, changing market size, market share and/or profitability.	Unexpected entry/success in a new market or unexpected exit/failure in an existing market.
Your valuation estimates (cash flows, risk, growth & value) are no longer operative	Your valuation estimates will have to be modified to reflect the new data about the company.	Valuation estimates have to be redone with new overall market potential and characteristics.
Estimate a probability that it will occur & consequences	Monte Carlo simulations or scenario analysis	Real Options

# An Earnings Report: Apple in May 2013

## The News in Apple's Second Quarter Earnings Report



# Apple: Another Earnings Report (September 2014)

In September 2014, Apple reported its third quarter earnings. While much of the information followed predictable patterns (Apple still gets the bulk of its revenues from smartphones, a market that is seeing slowing growth and smaller margins), Apple did announce two new products: the iWatch and Apple Pay.

1. Do you think either of these new products has the capacity to alter the current narrative for Apple?
2. If so, which one has the greater potential?
3. What are some of the indicators you will track to see if this potential is being captured?

# Twitter: Searching for a change– Sept 2014 (and contrasting with Facebook)

## Twitter's Numbers

Report Date	Business Breakdown		Global Breakdown		Mobile Breakdown		Invested Capital		
	Advertising	Data Licensing	Domestic	Foreign	Mobile	Rest	Capital	Quarterly Sales/Capital	T12m Sales/Capital
2/5/14	90.53%	9.47%	72.80%	27.20%	75%	25%	\$827	0.29	0.80
4/29/14	90.40%	9.60%	72.05%	27.95%	80%	20%	\$863	0.29	0.93
7/29/14	88.78%	11.22%	67.31%	32.69%	81%	19%	\$1,051	0.30	0.93

## Facebook's Numbers

Report Date	# Users (in millions)			Revenue Statistics		Net Income		Invested Capital		
	MAU	DAU	Mobile MAU	Advertising	Mobile	Before SBC	After SBC	Capital	Quarterly Sales/Capital	T12m Sales/Capital
7/26/12	955	552	543	83.78%	NR	-\$157	\$295	\$3,515	0.34	1.23
10/23/12	1010	584	604	86.37%	NR	-\$59	\$311	\$4,252	0.30	1.09
1/30/13	1060	618	680	83.91%	23.00%	\$64	\$426	\$4,120	0.38	1.24
5/1/13	1100	665	751	85.73%	30.00%	\$219	\$312	\$4,272	0.34	1.28
7/24/13	1150	699	819	88.25%	41.00%	-\$152	\$488	\$3,948	0.46	1.55
10/30/13	1190	728	874	89.29%	49.00%	\$425	\$621	\$4,007	0.50	1.71
1/29/14	1230	757	945	90.52%	53.00%	\$523	\$780	\$4,258	0.61	1.85
4/23/14	1280	802	1010	90.73%	59.00%	\$642	\$885	\$4,299	0.58	2.07
7/23/14	1320	829	1070	92.10%	62.00%	\$791	\$1,090	\$4,543	0.64	2.20

# Uber: Potential narrative breaks/shifts/ changes

- Narrative breaks
  - Regulatory shut downs: A regulatory shut down, especially if coordinated across a large region (an entire country or countries) could be catastrophic.
  - Legal jeopardy: A lawsuit with potentially huge liabilities, with Uber as a co-defendant, may put its survival at risk.
- Narrative shifts:
  - Regulatory cost burdens: Regulatory requirements on insurance and other costs will reduce margins and profitability.
  - Competitive changes: The entry of new competitors (the exit of old ones) will have negative (positive) consequences.
  - Global networking advantages: If success in one market is spilling over into other markets, it improves the odds of Uber having a high market share.
- Narrative changes
  - Success in new markets: If the Uber date car and mom car become ubiquitous in suburbia, it changes Uber's potential market (and value).
  - Changes in car ownership patterns: If dealers see a decline in a subset of car buyers (young & urban?), that would be good news (indirectly) for Uber.



## Management: Narratives, Numbers and Actions

“Management is, above all, a practice where art, science, and craft meet”



# The Management Perspective

- Have a story: If you are the management of a company, it behooves you to create a narrative for your company, both to guide investors in how they should view the company and you, in your decision making.
- The CEO's job? This is perhaps the most significant mission for the top manager of a company and it is what strategists like to call “strategic vision”, the capacity to elevate yourself above the details of every day management and to see/convey that narrative.
- Life Cycle: The importance of doing this is clearly larger, when a company is young and investors are seeking guidance but it is still critical as companies mature.

# 1. Develop a compelling, coherent narrative

1. Think like an investor: The steps involved in investors deriving a narrative for a company are identical to those needed by management: you have to develop a narrative, grounded in reality.
2. Use evidence (information) for feedback: The difference is that as managers, you have more power to act to deliver on that narrative and to potentially make it more expansive.
3. And your influence over outcomes: You also have access to more information, some of which may lead you to narrow your narrative and others to alter it.

## 2. Sell it to investors/employees/ customers

1. Communication skills: You have to be able to sell the narrative to investors, with just the right mix of numbers and story telling. You also have to get employees in your company to buy into your narrative and customers to go along.
2. Past experience: You will have more credibility, if you have converted narrative to numbers before, in other companies.
3. Charisma: Like anyone selling a big story, it helps to have a big personality and the charisma to get people to believe in your narrative (and in your capacity to convert the narrative to numbers).

### 3. Act consistently with your narrative

- If you have sold the world on your narrative, you should act consistently with that narrative in terms of
  - ▣ Where, how much and when you invest the company's resources.
  - ▣ The trade offs you make in decisions
  - ▣ The measures that you use to evaluate yourself and your progress on the narrative.
- If you act in ways that are inconsistent with your own narrative, you will lose long term (even if you may gain short term). Not only will you lose credibility with your investors, but your employees will take their cues from you about what matters and what does not.

## 4. Try to deliver numbers that back up narrative and be accountable when you do not..

1. Link numbers to narrative: When you report numbers to your investors, it is important that you tie those numbers (and how they are changing) with your narrative.
2. If numbers confirm narrative, restate the narrative: If the numbers are advancing your narrative, you should not only take credit for them but use it as your chance to restate your narrative.
3. Don't hide from bad numbers: If the numbers are contrary to narrative, face up to them and either explain why your narrative has not changed (in spite of the numbers) or has changed (because of the numbers)

## 5. Don't get distracted

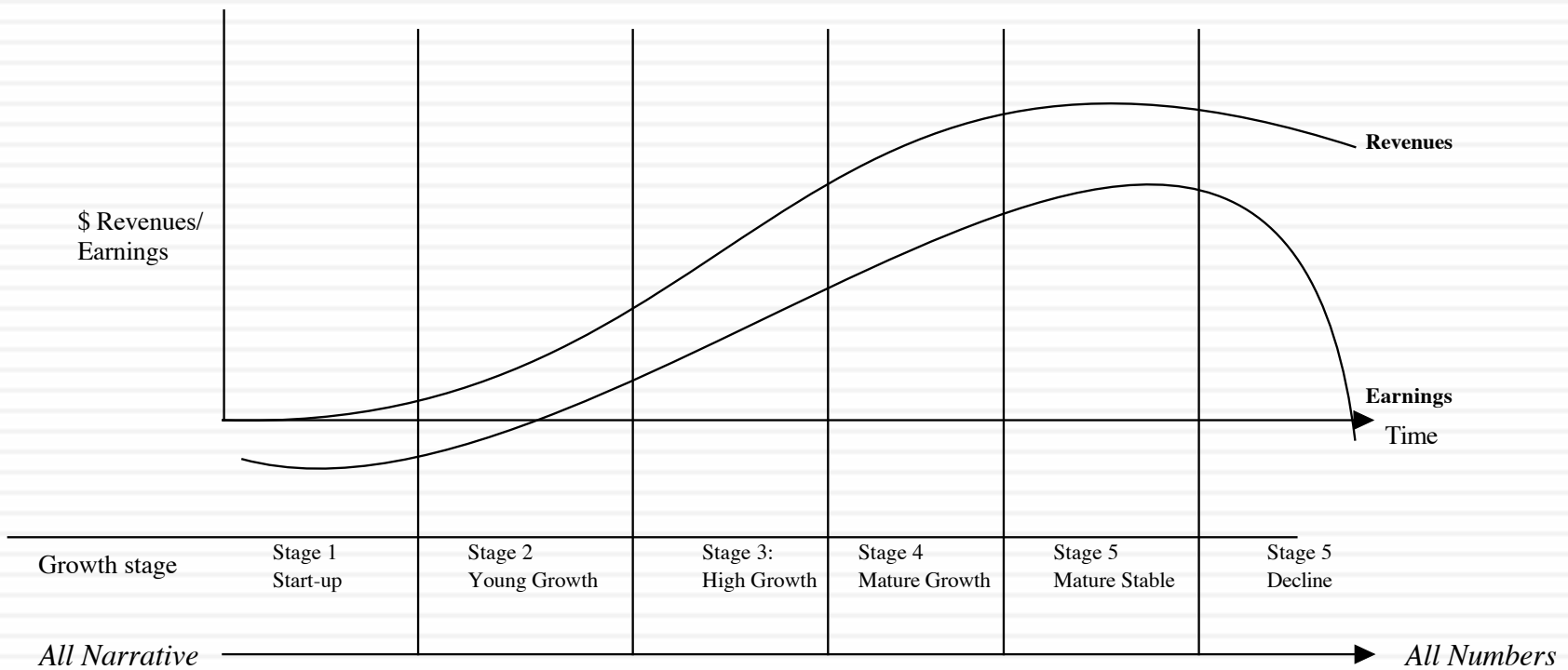
- By investors: Investors invest in companies for all types of reasons (and not just because of narratives). They have their own motives and agendas, some have more information than others and their advice can range the spectrum. Listen (respectfully) but you make your own decisions.
- By analysts: Analysts are free about dishing out advice and much of it reflects their view of the company, its competitors and the world. As with investors, analyst advice can range from abysmal to very good.
- By competitors: It is the job of your competitors to undercut your narrative and they will work at it. If you are reactive (to their actions) and, in the process, lose sight of your narrative, they have won.



## A Company's Life Cycle: Narrative & Numbers

“Growing old is mandatory; growing up is optional.”

# A Company's Life Cycle & Narrative/ Numbers





# As companies age, the emphasis shifts..

- Early in a company's life, when all you have are ideas and no clear business plan, it is all about the narrative. Not surprisingly, the most successful managers/investors at this stage are people who are stronger on narrative.
- As companies age, the emphasis shifts to numbers, partly because more of the value is determined by the narrative that has actually unfolded and partly because there are more numbers to focus on. The most successful managers/investors become people who are stronger on numbers.

# As emphasis shifts, managers and investors can resist, adapt or move on

- As young start-ups succeed and start moving into the growth, the managers who were instrumental in their success have three choices:
  - Adapt and adjust their focus to include numbers, without giving up their narrative.
  - Stay completely focused on narrative and ignore numbers.
  - Hand over control of the operating details of the company to a numbers person while handling the narrative part.
- With investors, the transition is made easier by the existence of public markets. As companies go public, these investors can cash out and go back to their preferred habitat. Investors who stray far from their strengths will pay a price.

# And the focus changes..

	<i>The Idea</i>	<i>The Product/Service</i>	<i>The Business Model</i>	<i>The Harvest</i>	<i>The End Game</i>
Phase	See an exploitable market	Develop a product or service to exploit the market	Create a business model to generate profits on product or service	Run as an ongoing business	Manage decline
Focus is on	Market Potential, Survival	Product usage, Competition	Viability and Scalability of Business Model	Profitability & Sustainability	Asset liquidity, Cash flows & Survival
Pricing Measures	Market size, Cash on hand, Access to capital	Number of users, User intensity	User engagement with business model, Revenues	Earnings (Levels, Margins & Returns)	Cash flows, Book Value
Pricing Metrics	EV/ Market Potential	EV/User	EV/Sales	PE & EV/ EBITDA	Dividend Yields, Price to Book



# The End

“There is no real ending. It’s just the place where you stop the story.”